

AMENDMENTS TO THE SPECIFICATION:

Please insert after the title, beginning at page 1, line 4, the following:

--Cross-Reference to Related Application

This Application is a divisional of copending U.S. Application Serial No. 09/273,627, filed March 23, 1999.--

Please amend the paragraph beginning at page 7, line 13, as follows:

~~Fig. 1 is a drawing that illustrates Figs. 1(A) and 1(B) are drawings that illustrate in simplified form a semiconductor device manufacturing apparatus according to the first embodiment of the present invention, with Fig. 1(A) showing the condition in which the electrode terminal of the ring is removed from the surface of the substrate and Fig. 1(B) showing the condition in which the electrode terminal of the ring is in contact with the substrate surface.~~

Please amend the paragraph beginning at page 7, line 19, as follows:

~~Fig. 2 is a Figs. 2(A) – 2(D) are cross-sectional view views of the process steps for the purpose of depositing a copper film and forming a copper wire, according to the semiconductor device manufacturing method of the present invention.~~

Please amend the paragraph beginning at page 7, line 22, as follows:

~~Fig. 3 is a plan view that shows Figs. 3(A) and 3(B) are plan views that show in simplified form a semiconductor device manufacturing apparatus according to the second embodiment of the present invention.~~

Please amend the paragraph beginning at page 8, line 6, as follows:

~~Fig. 1 is a simplified view that illustrates Figs. 1(A) and 1(B) are drawings that illustrate in simplified form the basic construction of a semiconductor device manufacturing apparatus~~

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according to the present invention, in that the apparatus 100 having a power supply means 40 that supplies electric current to the substrate W or the film F deposited thereupon.

Please amend the paragraph beginning at page 8, line 10, as follows:

In the semiconductor device manufacturing apparatus 40 100 of the present invention, the power supply means 40 supplies the electric current to the substrate W or the film F deposited thereupon, either directly or indirectly.

Please amend the paragraph beginning at page 8, line 13, as follows:

The semiconductor device manufacturing apparatus 40 100 of the present invention, has the power supply means 40 which comprises a power supply source 9 and a an electrode terminal unit 6 which is connected to the power supply source 9 and to the substrate W or the film F deposited thereupon.

Please amend the paragraph beginning at page 8, line 23, as follows:

While, in In the present invention, the electrode terminal units 6 may be provided on peripheral area of either the substrate W or a region on which the film F is being deposited on the substrate W.

Please amend the paragraph beginning at page 8, line 26, as follows:

Further in the present invention, the electrode terminal units 6 may comprise a plurality of pairs of two electrode terminal units 6, and each one of the pairs comprising two electrode terminal units 6, a first electrode terminal unit 6 and a second electrode terminal unit 6 which being oppositely arranged with interposing an area of the substrate W on which the film F will be deposited, therebetween.

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Please amend the paragraph beginning at page 11, line 2, as follows:

As shown in Fig. 1 Figs. 1(A) and 1(B), the thermal CVD apparatus according to the present invention has a hollow vacuum chamber 1, a vacuum pump 2, such as a turbomolecular pump, for the purpose of establishing a vacuum condition inside the vacuum chamber 1, a substrate holder 3 for supporting the substrate W, this being provided within the vacuum chamber 1, a an atomizer 4 that atomizes the copper to be deposited onto the substrate into the raw gas, a supply port 5 for the purpose of supplying the raw gas from the atomizer 4 to within the vacuum chamber 1, a ring 7 that has an electrode terminal unit 6 that makes contact with the surface of the substrate W, a piston cylinder apparatus 8 which moves the ring up and down, and a power supply source 9, which is electrically connected to the electrode terminal unit 6, for the purpose of changing the potential of the surface of the substrate W or supplying a current thereto, via the electrode terminal unit 6.

Please amend the paragraph beginning at page 12, line 17, as follows:

~~Fig. 2 is a cross-section view~~ Figs. 2(A) – 2(D) are cross-sectional views that ~~shows~~ show the process steps for depositing a copper film and forming a copper wire according to the semiconductor device manufacturing method of the present invention.

Please amend the paragraph beginning at page 12, line 25, as follows:

The width of the trench 12 can be ~~various~~ varied, ranging from 0.3 μm to 100 μm , and is indicated in this case as being 0.5 μm .

Please amend the paragraph beginning at page 13, line 25, as follows:

A potential of -20 V from the power supply source 9, via the electrode terminal unit 6, is applied to the surface of the substrate W. By means of this potential, vapor phase Cu (hfac) is attracted.

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Please amend the paragraph beginning at page 16, line 5, as follows:

In ~~convention~~ conventional thermal deposition, thermal oscillation causes virtually random migration.

Please amend the paragraph beginning at page 18, line 13, as follows:

Whereas in the first through third embodiments of the present invention an electrode terminal makes contact with the substrate W or with a film that is deposited thereupon, this being the means for applying either current or a potential, in the fourth embodiment a current or a potential is ~~apply~~ applied by a method that does not require contact with the substrate W or with a film that is deposited thereupon.

Please amend the paragraph beginning at page 18, line 28, as follows:

As shown in Fig. 5(B), by providing a coil 53 that is wound in a direction that is perpendicular to the substrate holder 3, a current ~~being~~ is caused to flow in the coil 53 by the power supply 51, thereby applying magnetic flux 54 in a direction that is perpendicular to the substrate W.

Please amend the paragraph beginning at page 19, line 9, as follows:

As mentioned above, ~~in the fifth~~ fourth embodiment of the present invention has a characteristic feature such that the power supply means 51 comprises a power supply source 55 and a non-contact electric current supplying means 50 which is connected to the power supply source means 56 and supplying the current to the substrate W or the film F deposited thereupon, without making the current supplying means to be directly connected thereto.

Please amend the paragraph beginning at page 21, line 7, as follows:

In one of the basic semiconductor device manufacturing ~~method~~ methods of the present invention, the method comprises,

a step of depositing a film onto a substrate using a thermal CVD reaction and
a step of depositing a film by using a thermal CVD reaction as a current is applied to
either one of the substrate and the deposited film.

Please amend the paragraph beginning at page 22, line 3, as follows:

Additionally, because the present invention ~~enable~~ enables the potential of the substrate
or the film deposited thereupon to be set to the ground potential, it enables the achievement of a
uniform potential distribution over the surface of the substrate, which can normally be disturbed
by, for example, electrostatic chucking, thereby improving the uniformity and repeatability of the
deposited film.

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